



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/966,221	09/28/2001	Thomas S. Laubner	17655	5888

7590

07/10/2003

Tyco Technology Resources
Suite 450
4550 New Linden Hill Road
Wilmington, DE 19808-2952

EXAMINER

WIMER, MICHAEL C

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 07/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/966,221

Applicant(s)

LAUBNER ET AL.

Examiner

Michael C. Wimer

Art Unit

2821

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 10, line 13, it is not understood what is meant by "the gain of 0 Dai".

The term "low angles" has different definitions in the specification.

In the specification, "low angles" are defined as follows:

On page 2, line 21 recites a range of 10-30 degrees from the horizon,
and page 3, line 18, states that low angles are "less than 30 degrees",
and page 5, lines 20-21 define "low angles" as "less than 45 degrees from the horizon". A definition of "low angles" should be established and made clear in the disclosure to resolve any confusion.

Appropriate correction is required.
2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

The phrase "as low as 35 degrees to said patch" does not appear in the originally filed disclosure.

The specific radiation gain "is increased by about at least 0.5 dB at about 35 degrees" in Claims 26 and 31 does not appear to be discussed in the specification.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2-7, 12, 13, 16-22, 25-28, 31 and 36 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claims 2 and 16, "the low angles" lacks a proper antecedent basis because the term was deleted in Claims 1 and 15 and there is confusion regarding the definition of "low angles", as pointed out above.

Claim 25 is redundant because it is identical to Claim 24, and therefore unclear. Should it depend from another claim?

Claims 26 and 31 are not understood because the 35-degree angle is established in their independent claims 1 and 15, and the antecedent basis for "said radiation gain" of these dependent claims is established at 35 degrees in Claims 15 and 31. Thus, it is unclear what is meant that the gain is increased by the specific amount claimed, because it is relative to 35 degrees. It appears that applicant has attempted to claim a value relative to a "prior art" embodiment (e.g., comparing Figure 5B with Fig. 6A). Such an attempt is improper and thus confuses the issues because it renders these claims indefinite.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2821

2. Claims 1,8,15,18 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese document 3-10407 (i.e., '407).

Regarding Claims 1,8,15,18 and 35, the '407 reference shows in Figures 1-5, a microstrip antenna and a method for providing a microstrip antenna, comprising an entirely flat, first conductive ground plane (unnumbered in the Figures 1 and 4); a dielectric substrate 2 disposed directly on the first ground plane; a patch 2 disposed on the substrate 1; a feed means for electrically feeding the patch; and a dielectric lens 4 or 24, for encapsulating at least a portion of the patch to increase radiation gain at an angle as low as 35 degrees to the patch, as set forth in Figure 1 or Figure 4, all arranged as claimed.

Only Figures 6-8 show an embodiment of a patch antenna and lens that result in a beam angle (to the vertical) greater than 45 degrees from the horizontal.

Figure 8 shows that beam pattern.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-5,7,9-14,16,19-23,26 and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese document '407 in view of Nichols et al. (5691726).

The Japanese document '407 is discussed above. Regarding Claims 2-7,9-14,16 and 19-23, Nichols et al show a second ground layer 36 between the

Art Unit: 2821

dielectric substrate and the first ground plane 62 “for raising the patch and further increasing the radiation gain at the low angles”, and a space is created between the ground planes 36 and 62 for providing additional elements 16,18,20,52 and 54. It would have been obvious to the skilled artisan to employ the second ground layer and space for components of Nichols et al in the ‘407 antenna. As to Claims 4,5 and 35, the lens 4,24 of document ‘407 completely covers the top of the patch, and an air gap exists between the patch 2 and lens 4,24.

Regarding Claim 7, both references provide a “dome configuration.”

Further regarding Claims 9-13 and 19-22, Nichols et al show the second antenna, monopole 66 and dielectric cap 68 in Fig. 3. It would have been obvious to the skilled artisan to employ the second antenna of Nichols et al in the patch antenna of the ‘407 reference. The antenna 66 may be placed at the center of the patch in Nichols et al because of the zero voltage point on the patch. As to Claims 14 and 23, feed pin 38 is shown in Nichols et al.

Regarding Claims 26,30-33, specific magnitudes of gain at a particular angle are limitations strictly dependent upon the number of antenna elements, dielectric material of the lens and shaping of the lens. Such specifics are obvious to the skilled artisan because they are specifications set forth in a particular design model. Regarding Claims 34 and 36, all radiation to/from the patch passes through the lens.

5. Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Japanese reference '407 in view of Nichols et al as applied to Claims 2 and 16 above, and further in view of Feller (5200756).

Regarding Claims 6 and 17, Feller shows a microstrip antenna 12 atop a first ground plane layer 23 and having a second, elevated ground plane 25 "for raising the patch and further increasing the radiation gain at low angles" (see col. 1, lines 34-37) and having a "slant portion" (Fig. 1D). It would have been obvious to the skilled artisan to employ the substrate 23 and base 13 of Feller in lieu of the flat base 1,2 of the Japanese '407 reference/Nichols et al for the purpose of providing relatively low angle radiation in a GPS antenna, as suggested by the latter.

6. Claims 24,25 and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese reference '407 in view of Nichols et al as applied to claims above above, and further in view of Brown et al. (6246369 B1).

Regarding Claims 24,25 and 29, the application of a dielectric lens 22 disposed directly on the patch antenna 16 (and used in a GPS) is shown by Brown et al. to be well known in the antenna art and obvious to employ therein by the skilled artisan. Although a gap is presented between lens and patch in the Japanese document '407, it would have been obvious to the skilled artisan to employ the dielectric lens of Brown et al. in the former as taught and suggested by the latter (see col. 2, lines 49-63 and the paragraph bridging columns 2 and 3). Further regarding Claims 27 and 28, as noted above, recitations of specific gain and

Art Unit: 2821

angle of the antenna beam pattern are obvious to the skilled antenna artisan because they are dependent upon the number of antenna elements, dielectric material of the lens and shaping of the lens, all characteristic variables determined by a specific design problem.


Response to Arguments

7. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Wimer whose telephone number is (703) 305-3555. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don K. Wong can be reached on (703) 308-4856. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Michael C. Wimer
Primary Examiner
Art Unit 2821

MCW
June 2, 2003